Claims:

1. A substrate processing apparatus, comprising:

a substrate support having a substrate receiving surface; and

a fluid seal disposed at a perimeter portion of the substrate support and adapted to prevent a fluid from flowing on a backside of a substrate disposed on the substrate receiving surface of the substrate support.

2. The apparatus of claim 1, wherein the fluid seal comprises a fluid drain formed on the perimeter portion of the substrate support.

3. The apparatus of claim 2, wherein the fluid seal further comprises a gas outlet formed on the perimeter portion of the substrate support inward of the fluid drain and adapted to provide a purge gas to the backside of the substrate disposed on the substrate receiving surface of the substrate support.

4. The apparatus of claim 3, wherein the fluid seal further comprises a channel formed in the substrate support which communicates with the gas outlet and the fluid drain.

5. The apparatus of claim 3, wherein the fluid seal further comprises at least one elastomeric seal disposed on the substrate support inward of the gas outlet.

6. The apparatus of claim 3, wherein the fluid seal further comprises at least one elastomeric seal disposed on the substrate support between the gas outlet and the fluid drain.

7. The apparatus of claim 5, wherein the fluid seal further comprises at least one elastomeric seal disposed on the substrate support between the gas outlet and the fluid drain.

8. The apparatus of claim 1, wherein the fluid seal comprises at least one elastomeric seal disposed on the substrate support.

9. The apparatus of claim 8, further comprising a gas port disposed on the substrate support.

10. The apparatus of claim 9, wherein the gas port is adapted to provide a gas pressure.

11. The apparatus of claim 9, wherein the gas port is adapted to provide a vacuum pressure.

12. The apparatus of claim 9, wherein the gas port is disposed between two elastomeric seals which form a portion of the substrate receiving surface.

13. The apparatus of claim 1, wherein the substrate support is adapted for face-up processing.

14. The apparatus of claim 1, wherein the substrate support is adapted for face-down processing.

15. The apparatus of claim 1, wherein the substrate support is adapted to rotate.

16. The apparatus of claim 1, wherein the substrate support is adapted to heat a substrate on the substrate receiving surface.

17. The apparatus of claim 1, wherein the substrate support comprises a material selected from the group consisting of ceramics, coated metals, and polymers. .

18. The apparatus of claim 1, wherein the substrate support comprises alumina.

19. A substrate processing apparatus, comprising:

an evaporation shield adapted to be positioned over a substrate disposed on a substrate support.

20. The apparatus of claim 19, wherein the evaporation shield is sized to substantially cover the substrate.

21. The apparatus of claim 20, wherein the evaporation shield comprises a fluid retaining surface adapted to form a fluid filled gap with respect to the substrate.

22. The apparatus of claim 21, wherein the gap is adapted to be filled with a fluid layer.

23. The apparatus of claim 22, wherein the evaporation shield further comprises at least one port to deliver a fluid to form the fluid layer.

24. The apparatus of claim 22, wherein the evaporation shield further comprises at least one port to reclaim a fluid on the substrate.

25. The apparatus of claim 22, wherein the evaporation shield further comprises at least one port to deliver a fluid to form the fluid layer and to reclaim the fluid on the substrate.

26. The apparatus of claim 22, wherein the evaporation shield is adapted to provide heat to the fluid layer.

27. The apparatus of claim 19, wherein the evaporation shield comprises a degassing membrane.

28. The apparatus of claim 27, wherein the evaporation shield further comprises a plenum in communication with the degassing membrane.

29. The apparatus of claim 28, wherein the evaporation shield further comprises a plenum port coupled to the plenum.

30. The apparatus of claim 29, further comprising a vacuum source coupled to the plenum port.

31. The apparatus of claim 29, further comprising a low partial pressure source coupled to the plenum port.

32. The apparatus of claim 22, further comprising a transducer coupled to the evaporation shield to provide acoustic waves to the fluid layer.

33. The apparatus of claim 32, wherein the transducer is disposed against the evaporation shield.

34. The apparatus of claim 32, wherein the transducer comprises a rod which is adapted to contact the fluid layer.

35. The apparatus of claim 22, wherein the evaporation shield further comprises a seal adapted to contact the substrate support.

36. The apparatus of claim 22, wherein the substrate support further comprises a seal adapted to contact the evaporation shield.

37. The apparatus of claim 22, wherein the evaporation shield is adapted to rotate.

38. The apparatus of claim 22, wherein the evaporation shield further comprises fluid agitation components selected from the group consisting of channels, veins, and protrusions, the fluid agitation components being disposed on a bottom surface of the evaporation shield.

39. The apparatus of claim 19, wherein the evaporation shield comprises a material selected from the group consisting of polymers, ceramics, quartz, and coated metals.

40. The apparatus of claim 19, wherein the evaporation shield comprises a polymer material.

41. A substrate processing chamber adapted for electroless deposition, comprising:

a substrate support, comprising:

a substrate receiving surface;

a vacuum port;

vacuum grooves in communication with the vacuum port; and

a fluid seal at a perimeter portion of the substrate support; and

a fluid source;

a fluid input coupled to the fluid source and adapted to deliver a processing fluid to a substrate disposed on the substrate receiving surface; and

a drain.

42. The substrate processing chamber of claim 41, wherein the fluid input is adapted to deliver a metered amount of processing fluid to the substrate.

43. The substrate processing chamber of claim 41, further comprising fluid lines connecting the fluid source and the fluid input, the fluid lines being adapted to be purged with a purge fluid.

44. The substrate processing chamber of claim 41, further comprising a regeneration element coupled to the drain and coupled to the fluid input, the regeneration element adapted to recirculate the processing fluid from the drain to the fluid input for reuse in the substrate processing chamber

45. The substrate processing chamber of claim 41, wherein the processing fluid comprises a chemical mixture, wherein the fluid source is adapted to prepare the chemical mixture at a point-of-use.

46. The substrate processing chamber of claim 41, wherein the fluid input is adapted to deliver a heated fluid to the substrate processing.

47. The substrate processing chamber of claim 41, wherein the substrate support is adapted for face-up processing.

48. The substrate processing chamber of claim 47, wherein the fluid input

comprises at least one nozzle adapted to be positioned above the substrate support.

49. The substrate processing chamber of claim 47, further comprising an evaporation shield sized to substantially cover the substrate disposed on the substrate receiving surface and adapted to be positioned over the substrate to form a gap between the evaporation shield and the substrate, the gap being adapted to be filled with a fluid layer.

50. The substrate processing chamber of claim 49, wherein the fluid input comprises at least one port in the evaporation shield.

51. The substrate processing chamber of claim 49, wherein the drain comprises at least one fluid port disposed in the evaporation shield.

52. The substrate processing chamber of claim 49, wherein the fluid input and the drain comprises at least one fluid port disposed in the evaporation shield.

53. The substrate processing chamber of claim 49, wherein the substrate support is adapted to rotate.

54. The substrate processing chamber of claim 41, wherein the evaporation shield is adapted to rotate.

55. The substrate processing chamber of claim 49, wherein the substrate support and the evaporation shield are adapted to rotate.

56. The substrate processing chamber of claim 55, wherein the substrate support and the evaporation shield are adapted to rotate in opposite directions.

57. The substrate processing chamber of claim 55, wherein the substrate support and the evaporation shield are adapted to rotate in the same direction.

58. The substrate processing chamber of claim 49, further comprising a seal

between the evaporation shield and the substrate support.

59. The substrate processing chamber of 49, wherein the evaporation shield comprises a degassing membrane.

60. The substrate processing chamber of claim 59, wherein the evaporation shield further comprises a plenum in communication with the degassing membrane.

61. The substrate processing chamber of claim 60, wherein a vacuum source is coupled to the plenum.

62. The substrate processing chamber of claim 60, wherein a low partial pressure source is coupled to the plenum.

63. The substrate processing chamber of claim 49, further comprising a transducer coupled to the evaporation shield to provide acoustic waves to the fluid layer.

64. The substrate processing chamber of claim 63, wherein the transducer is disposed against the evaporation shield.

65. The substrate processing chamber of claim 63, wherein the transducer comprises a rod which is adapted to contact the fluid layer.

66. The substrate processing chamber of claim 49, wherein the evaporation shield further comprises fluid agitation components selected from the group consisting of channels, veins, and protrusions and disposed on a bottom surface of the evaporation shield.

67. The substrate processing chamber of claim 41, wherein the substrate support is adapted for face-down processing.

68. The substrate processing chamber of claim 67, further comprising a bowl, the substrate support being adapted to position a substrate proximate a surface of the

bowl.

69. The substrate processing chamber of claim 68, wherein the substrate support is adapted to immerse the substrate in the processing fluid disposed in the bowl.

70. The fluid delivery system of claim 68, wherein the fluid input comprises at least one fluid port disposed on the bowl.

71. The fluid delivery system of claim 68, wherein the drain comprises at least one fluid port disposed on the bowl.

72. The fluid delivery system of claim 68, wherein the fluid input and the drain comprises at least one fluid port disposed on the bowl.

73. The substrate processing chamber of claim 70, wherein the substrate support is adapted to be positioned over the bowl to form a gap between a substrate disposed on the substrate support and the bowl, the at least one fluid port adapted to fill the gap with a fluid layer.

74. The substrate processing chamber of claim 68, wherein the bowl is adapted to heat a solution residing on the bowl.

75. The substrate processing chamber of claim 41, wherein the fluid source is adapted to provide a fluid selected from the group consisting of deionized water, acid solutions, base solutions, salt solutions, noble metal/Group IV metal solutions, semi-noble metal/Group IV metal solutions, noble metal solutions, semi-noble metal solutions, Group IV metal solutions, copper solutions, reducing agent solutions, and combinations thereof.

76. A substrate processing chamber adapted for electroless deposition, comprising:

a substrate support; and

a power supply coupled to the substrate support to apply a bias to a substrate structure of a substrate disposed on the substrate support.

77. The substrate processing chamber of claim 76, wherein the power supply comprises a DC power supply.

78. The substrate processing chamber of claim 76, wherein the power supply is coupled to a conductive portion of the substrate structure.

79. The substrate processing chamber of claim 78, wherein a positive pole of the power supply is coupled to the substrate structure.

80. The substrate processing chamber of claim 78, wherein a negative pole of the power supply is coupled to the substrate structure.

81. The substrate processing chamber of claim 76, wherein the power supply is adapted to alternate the polarity.

82. A semiconductor deposition system, comprising:

one or more electroless deposition chambers adapted to deposit a catalytic layer; and

one or more electroless deposition chambers adapted to deposit a conductive material layer.

83. The system of claim 82, further comprising one or more anneal chambers.

84. The system of claim 82, further comprising one or more electroplating chambers adapted to deposit a conductive material layer.

85. The system of claim 82, wherein each electroless chamber is a dual purpose electroless deposition chamber adapted to deposit both a catalytic layer and a conductive material layer.

86. The system of claim 82, further comprises at least one spin-rinse-dry station.

87. The system of claim 82, further comprising an electrolyte supply fluidly connected to the one or more electroless deposition chamber adapted to deposit a catalytic layer and to the one or more electroless deposition chambers adapted to deposit a conductive material layer.

88. A substrate processing chamber adapted for electroless deposition, comprising:
a substrate support, and
a transducer.

89. The substrate processing chamber of claim 88, wherein the transducer is coupled to the substrate support.

90. The substrate processing chamber of claim 88, wherein the transducer comprises a rod adapted to contact a fluid layer residing on a substrate disposed on the substrate support.

91. A multilevel chamber adapted for electroless deposition, comprising:
a plurality of catch-up cups, each catch-up cup defining a region;
a movable substrate support adapted to move a substrate between each region defined by the catch-up cups;
a solution inlet adapted to provide a processing solution to one region; and
a rinse inlet adapted to provide a rinsing solution to another region.

92. The multilevel chamber of claim 91, wherein the movable substrate support is adapted to rotate.

93. The multilevel chamber of claim 91, further comprising an evaporation shield.

94. The multilevel chamber of claim 93, wherein the evaporation shield is adapted to move away from the substrate support to prevent dripping from the evaporation shield onto a substrate disposed on the substrate support.

95. The multilevel chamber of claim 91, wherein one of the catch-up cups is

adapted to reclaim the processing solution and wherein another of the catch-up cups is adapted to reclaim the rinsing solution.